

CLAIMS

1. An information recording apparatus which irradiates a laser light onto a recording medium and forms a recording mark
5 corresponding to a recording signal, comprising:
a light source which emits the laser light; and
a signal generating unit which generates a recording pulse signal driving the light source based on the recording signal, wherein the recording pulse signal includes a mark period
10 for forming the recording mark and a space period for forming no recording mark, and
wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility in a mark period corresponding to a long mark, and corresponds to a
15 recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.
2. An information recording apparatus which irradiates a laser light onto a recording medium and forms a recording mark
20 corresponding to a recording signal, comprising:
a light source which emits the laser light; and
a signal generating unit which generates a recording pulse signal driving the light source based on the recording signal, wherein the recording pulse signal includes a mark period
25 for forming the recording mark and a space period for forming no recording mark, and
wherein a level of the recording pulse signal corresponds to a recording power having waveform distortion equal to or smaller than a predetermined value in a mark period corresponding to a
30 long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.
3. An information recording apparatus which irradiates

a laser light onto a recording medium and forms a recording mark corresponding to a recording signal, comprising;

a light source which emits the laser light; and

5 a signal generating unit which generates a recording pulse signal driving the light source based on the recording signal,

wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

10 wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility and having waveform distortion equal to or smaller than a predetermined value in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

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4. The information recording apparatus according to claim 1, wherein the recording power ensuring the reproduction compatibility is a recording power having a modulation degree within a predetermined range.

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5. The information recording apparatus according to claim 4, wherein the recording power having the modulation degree within the predetermined range is a recording power having a modulation degree equal to or larger than 60%.

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6. The information recording apparatus according to claim 2, wherein the recording power having the waveform distortion equal to or smaller than the predetermined value is a recording power having waveform distortion equal to or smaller than 10%.

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7. The information recording apparatus according to claim 2, wherein the recording power having the waveform distortion equal to or smaller than the predetermined value is a recording power having waveform distortion of 0.

8. The information recording apparatus according to claim 1, wherein the recording power having the asymmetry within the predetermined range is a recording power having asymmetry within
5 a range of -0.05 to 0.15.

9. The information recording apparatus according to claim 1, wherein the short mark is a shortest mark, and the long mark is a mark other than the short mark.
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10. The information recording apparatus according to claim 1, wherein the short mark is a shortest mark and a second shortest mark, and the long mark is a mark other than the short mark.
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11. The information recording apparatus according to claim 1, wherein the short mark is a mark having a level of no largest magnitude, and the long mark is a mark having a level of the largest magnitude.
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12. The information recording apparatus according to claim 1, wherein the recording pulse signal has a same level for all the long marks.

25 13. The information recording apparatus according to claim 1, wherein the recording pulse signal has different levels for each of the short marks.

14. An information recording method which irradiates a
30 laser light onto a recording medium and forms a recording mark corresponding to a recording signal, comprising:

a signal generating process which generates a recording pulse signal driving a light source based on the recording signal; and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

15. An information recording method which irradiates a laser light onto a recording medium and forms a recording mark corresponding to a recording signal, comprising

a signal generating process which generates a recording pulse signal driving a light source based on the recording signal; and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power having waveform distortion equal to or smaller than a predetermined value in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

16. An information recording method which irradiates a laser light onto a recording medium and forms a recording mark corresponding to a recording signal, comprising:

a signal generating process which generates a recording pulse signal driving a light source based on the recording signal;

and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

wherein the recording pulse signal includes a mark period
5 for forming the recording mark and a space period for forming no recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility and having waveform distortion equal to or smaller than a predetermined value
10 in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

17. An information recording program executed in an
15 information recording apparatus including a light source, irradiating a laser light onto a recording medium to form a recording mark corresponding to a recording signal, and making the information recording apparatus execute:

a signal generating process which generates a recording
20 pulse signal driving the light source based on the recording signal; and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

wherein the recording pulse signal includes a mark period
25 for forming the recording mark and a space period for forming no recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility in a mark period corresponding to a long mark, and corresponds to a recording
30 power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

18. An information recording program executed in an information recording apparatus including a light source,

irradiating a laser light onto a recording medium to form a recording mark corresponding to a recording signal, and making the information recording apparatus execute:

5 a signal generating process which generates a recording pulse signal driving the light source based on the recording signal; and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

10 wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power having waveform distortion equal to or smaller than a predetermined value in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.

19. An information recording program executed in an information recording apparatus including a light source, irradiating a laser light onto a recording medium to form a recording mark corresponding to a recording signal, and making the information recording apparatus execute:

20 a signal generating process which generates a recording pulse signal driving the light source based on the recording signal; and

an irradiating process which irradiates a laser pulse onto the recording medium based on the recording pulse signal,

30 wherein the recording pulse signal includes a mark period for forming the recording mark and a space period for forming no recording mark, and

wherein a level of the recording pulse signal corresponds to a recording power ensuring reproduction compatibility and having waveform distortion equal to or smaller than a predetermined value

in a mark period corresponding to a long mark, and corresponds to a recording power having asymmetry within a predetermined range in a mark period corresponding to a short mark.